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| 10/564,645 | 01/13/2006 | Okuyama Ryoichi | 4174-060105 | 1845 |
| 28289 7590 11/06/2008 THE WEBB LAW FIRM, P.C. 700 KOPPERS BUILDING 436 SEVENTH AVENUE PITTSBURGH, PA 15219 | | | | |
| EXAMINER | | | | |
| SCULLY, STEVEN M | | | | |
| ART UNIT | | PAPER NUMBER | | |
| 1795 | | | | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/564,645

Applicant(s)

RYOICHI, OKUYAMA

Examiner

Steven Scully

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 October 2008.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 5-14 is/are pending in the application.
4a) Of the above claim(s) 11-14 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 5-10 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 13 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/5508)
Paper No(s)/Mail Date 05/18/2008
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Individual Patent Application
6) ☒ Other: JP2001-069614 Translation

**FUEL CELL SYSTEM AND METHOD FOR DETECTING RUNNING OUT OF FUEL IN
FUEL CELL**

Examiner: Scully S.N.: 10/564,645 Art Unit: 1795 October 31, 2008

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I, claims 5-10, in the reply filed on October 16, 2008 is acknowledged. The traversal is on the ground(s) that search and examination of the claims in the application can be made without serious burden. This is not found persuasive because restriction of a national stage 371 application of a PCT is done on the basis of unity of invention. As discussed in the Restriction, the current claims do not possess a special technical feature because the common technical feature is known in the art. See MPEP § 823.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

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1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claim 5-10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Becerra et al. (US2005/0014041) in view of Aoyagi et al. (US6,670,063) and Yamada (JP2001-069614).

Applicant appears to be invoking U.S.C. § 112, 6th paragraph, wherein means-plus-function language is used in claims 5-10.

With respect to claim 5, Becerra et al. disclose a fuel cell system comprising a fuel cell (18) and a backup battery (28). See Figure 1A. The fuel cell is any type of fuel cell, for example a direct methanol fuel cell. See [0027]. Further, the system comprises a detachable fuel canister that can be replaced when necessary for immediate replenishment of the fuel supply. See [0042]. When the fuel cell is out of fuel and thus providing a voltage below a predetermined value, the rechargeable backup battery (28) is used to provide power for the system. See [0042].

Becerra et al. are silent regarding a means for monitoring an output of the fuel cell. Aoyagi et al. disclose a fuel cell system comprising a fuel cell and a rechargeable battery. The fuel cell produces a measured voltage. See Figure 3. The battery capacity is monitored. See Figure 5. It would have been obvious to one of ordinary skill in the art to monitor the system of Becerra et al. because Aoyagi et al. teaches it to prevent the overcharging and overdischarging of the rechargeable battery. See abstract.

Becerra et al. in view of Aoyagi et al. are silent regarding warning that the fuel cell is running out of fuel when the remaining capacity of the secondary battery decreases below a predetermined value. Yamada discloses a system comprising a fuel cell and a backup battery where when a residue amount of fuel of the fuel cell and capacity of the battery is below a predetermined value, an alarm is displayed. See [0007]. It would have been obvious to one of ordinary skill in the art at the time of the invention to display an alarm when the remaining capacity is low because Yamada teaches to display an alarm when fuel and battery capacity are low, indicating to the user that the fuel is low to make the user aware of the problem.

With respect to claims 6, 7 and 9, as discussed above, Becerra et al. in view of Aoyagi et al. disclose monitoring the voltage of the fuel cell. This provides a detecting means for when there is a decrease in the output of the fuel cell as well. Further, because the fuel is out the load is obviously not produced by the fuel cell and thus is provided by the secondary battery. See [0042].

Becerra et al. in view of Aoyagi et al. are silent regarding a means of indicating a warning signal showing that the fuel cell is running out of fuel. Yamada discloses a system comprising a fuel cell and a backup battery where when a residue amount of fuel of the fuel cell and capacity of the battery is below a predetermined value, an alarm is displayed. See [0007]. It would have been obvious to one of ordinary skill in the art at the time of the invention to display an alarm when fuel is low because Yamada teaches to display an alarm when fuel is low, indicating to the user that the fuel is low to make the user aware of the problem.

With respect to claims 8 and 10, Aoyagi et al. disclose various battery demands depending on the battery's capacity. The battery's power demand is negative when the capacity is low and thus the fuel cell is utilized. See Figure 5. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the fuel cell to provide power when the battery capacity is low to prevent over discharge. See abstract.

Contact/Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven Scully whose telephone number is (571)270-5267. The examiner can normally be reached on Monday to Friday 7:30am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on (571)272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/S. S./

Examiner, Art Unit 1795

/Dah-Wei D. Yuan/

Supervisory Patent Examiner, Art Unit 1795